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(54) **METHOD AND DEVICE FOR ELECTROSTATICALLY SEPARATING OVERSPRAY WITH AN ABSORPTION AGENT**

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USPC 55/DIG. 46; 95/57, 58; 96/52, 53; 118/326, 620
See application file for complete search history.

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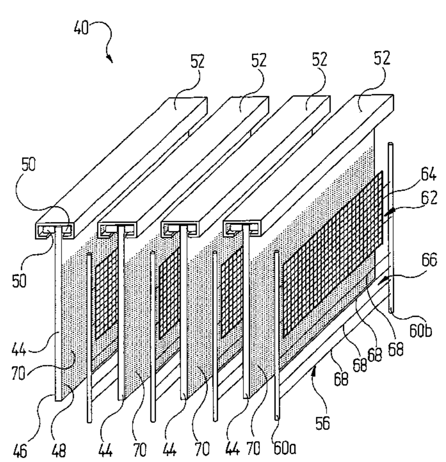
(57) **ABSTRACT**

A method for separating overspray from the cabin exhaust air of coating systems, in particular of painting systems, which is laden with overspray, the overspray is taken up by an air flow and conveyed to an electrostatically operating separating device. There, the bulk at least of the solids is separated from the overspray at at least one separating surface. An electrically conductive material or material mixture is used as a separating agent, which is applied to the at least one separating surface of the separating device and at the operating temperature of the separating device has a wax-like consistency. Also a separating device with such a wax-like material and a system for coating articles.

33 Claims, 11 Drawing Sheets



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B03C 3/013	(2006.01)
B03C 3/017	(2006.01)
B03C 3/53	(2006.01)

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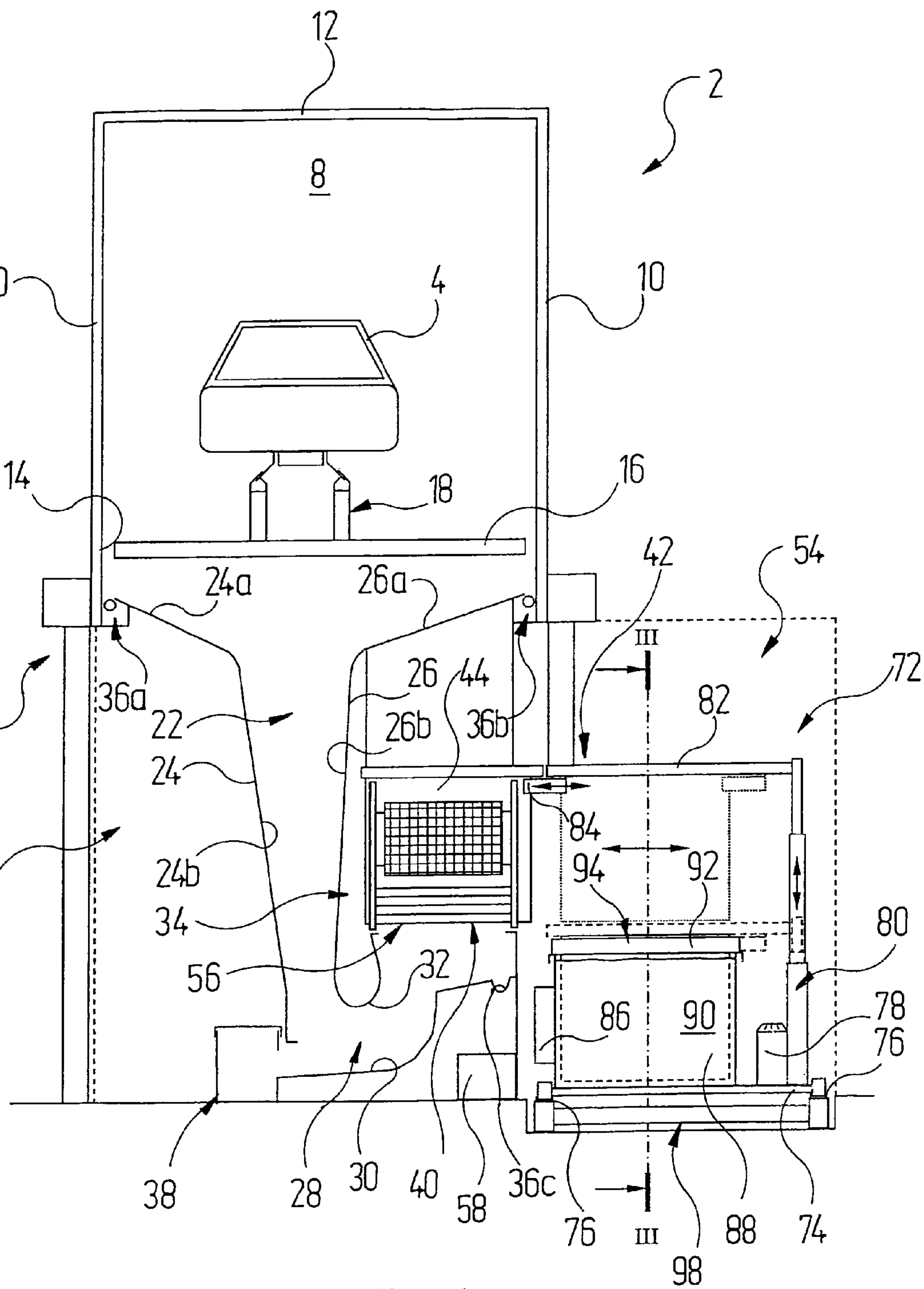
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Fig. 1

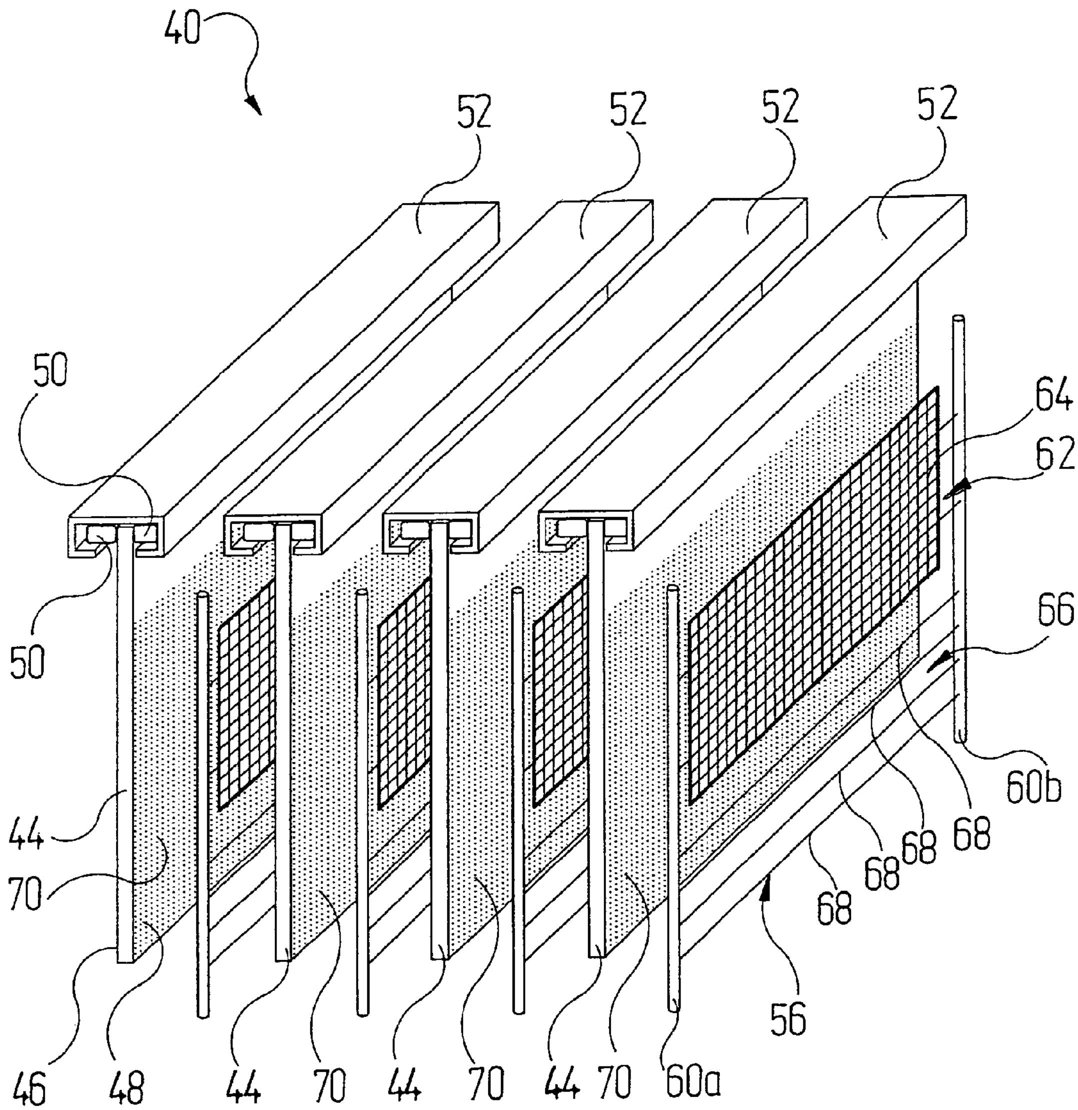
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Fig. 2

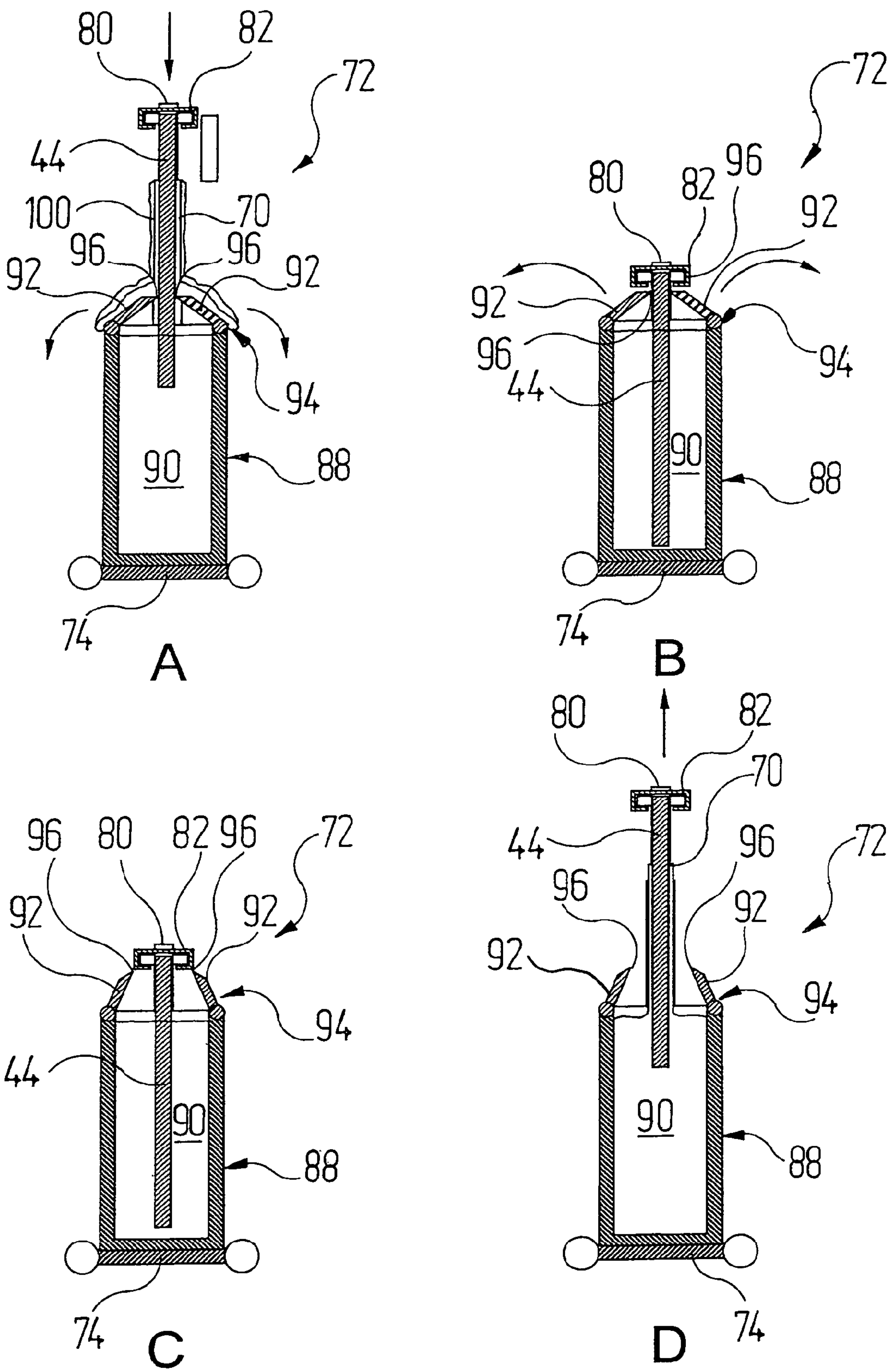
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Fig. 3

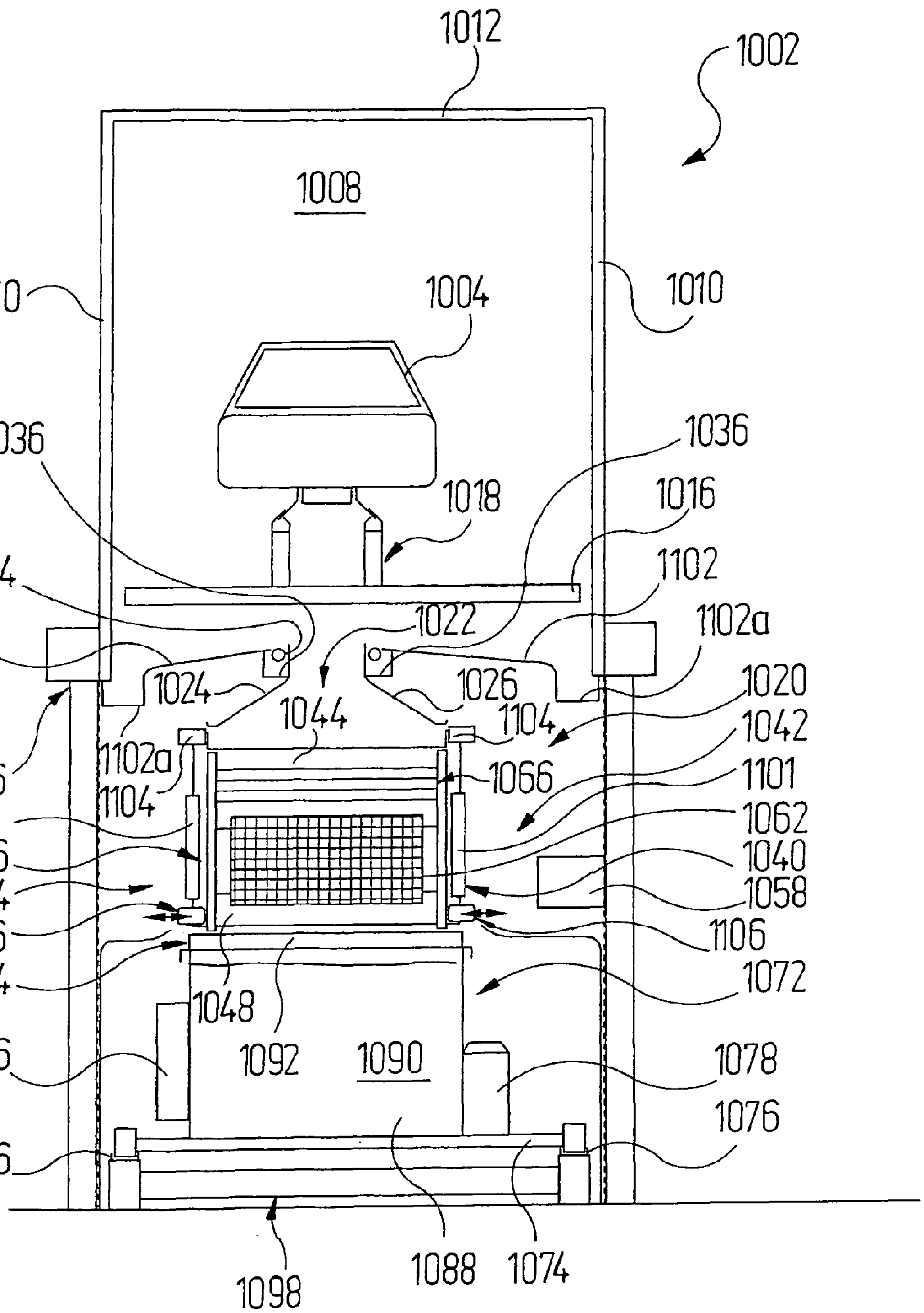
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Fig. 4

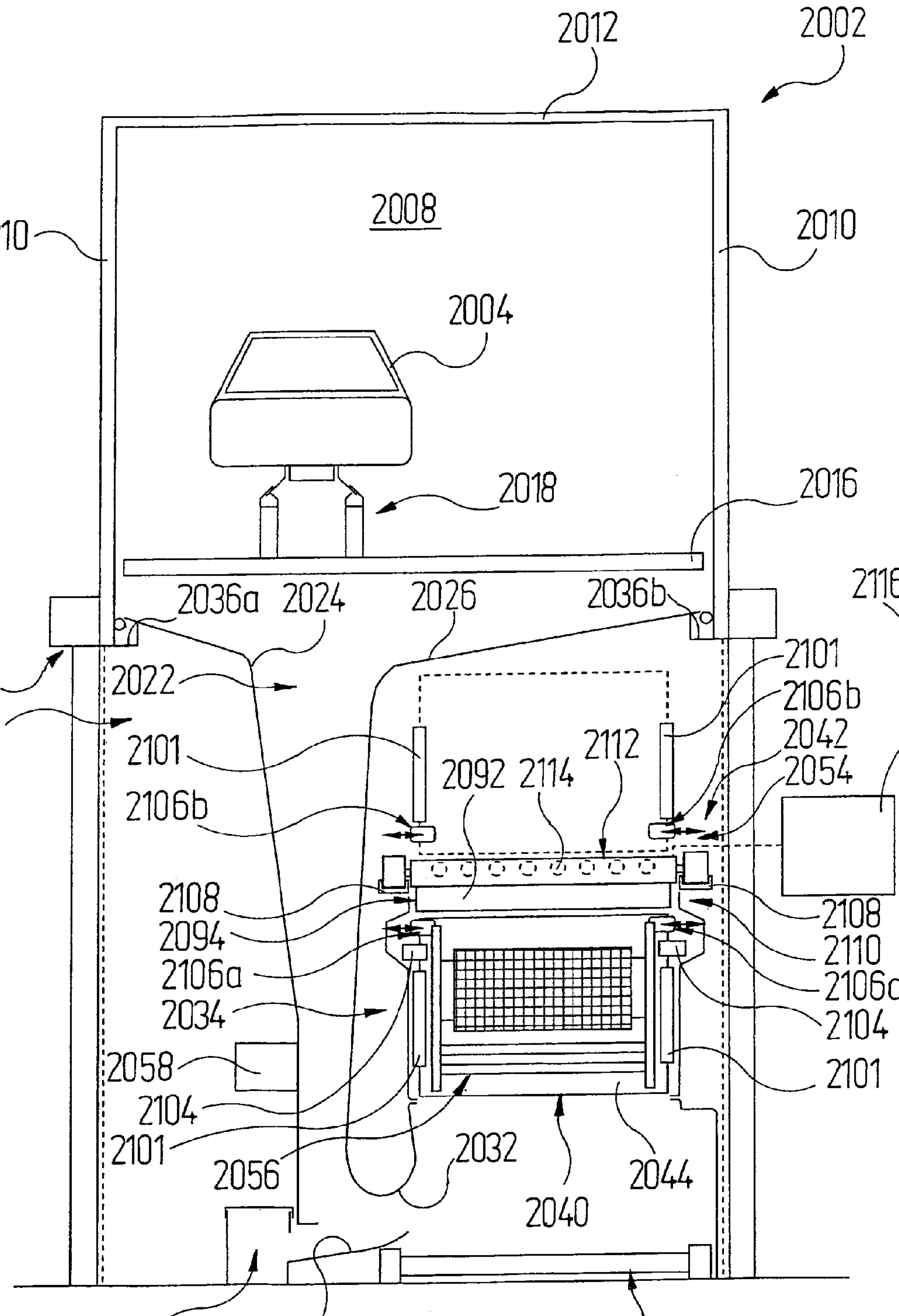
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Fig. 5

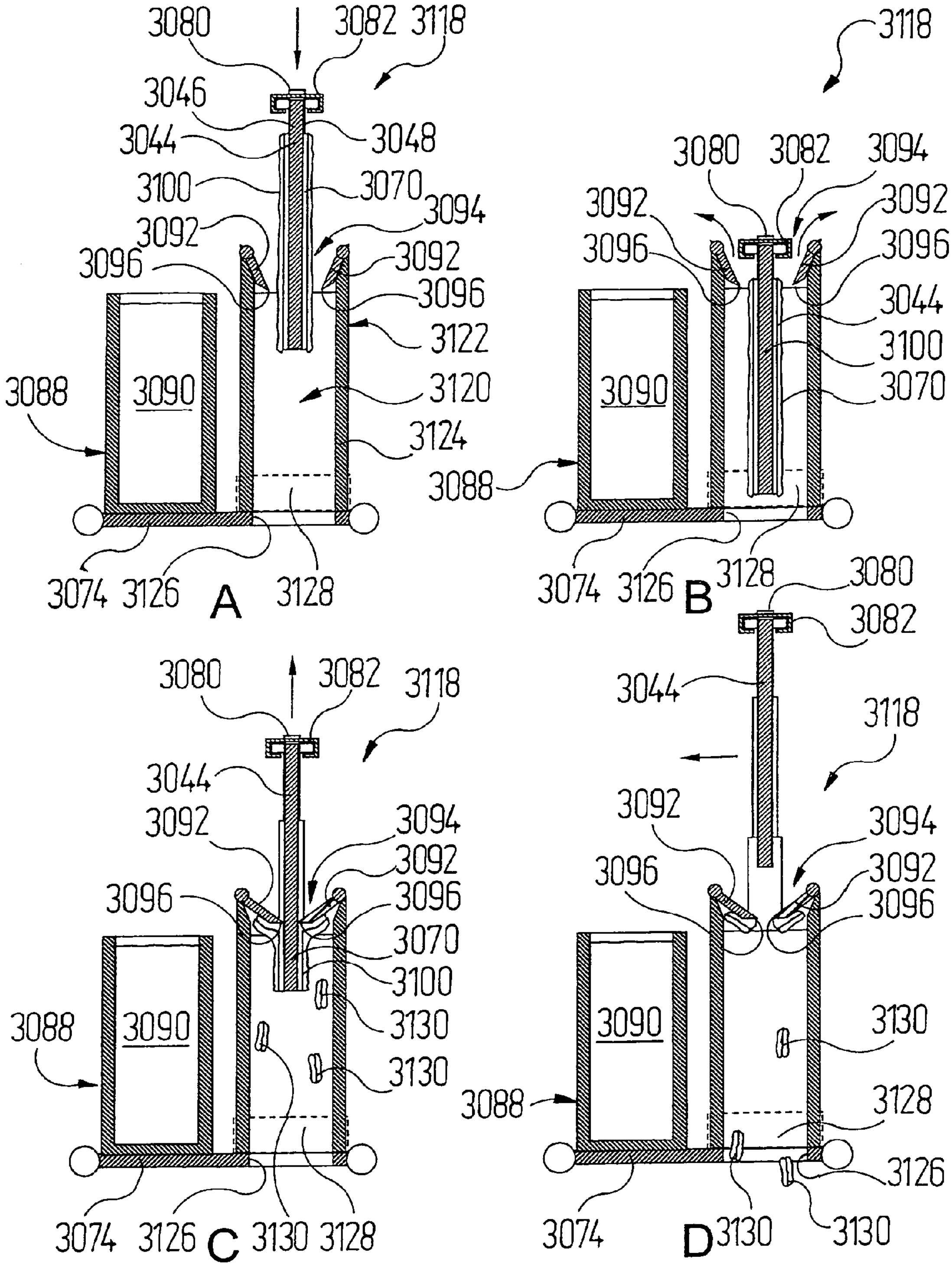
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Fig. 6

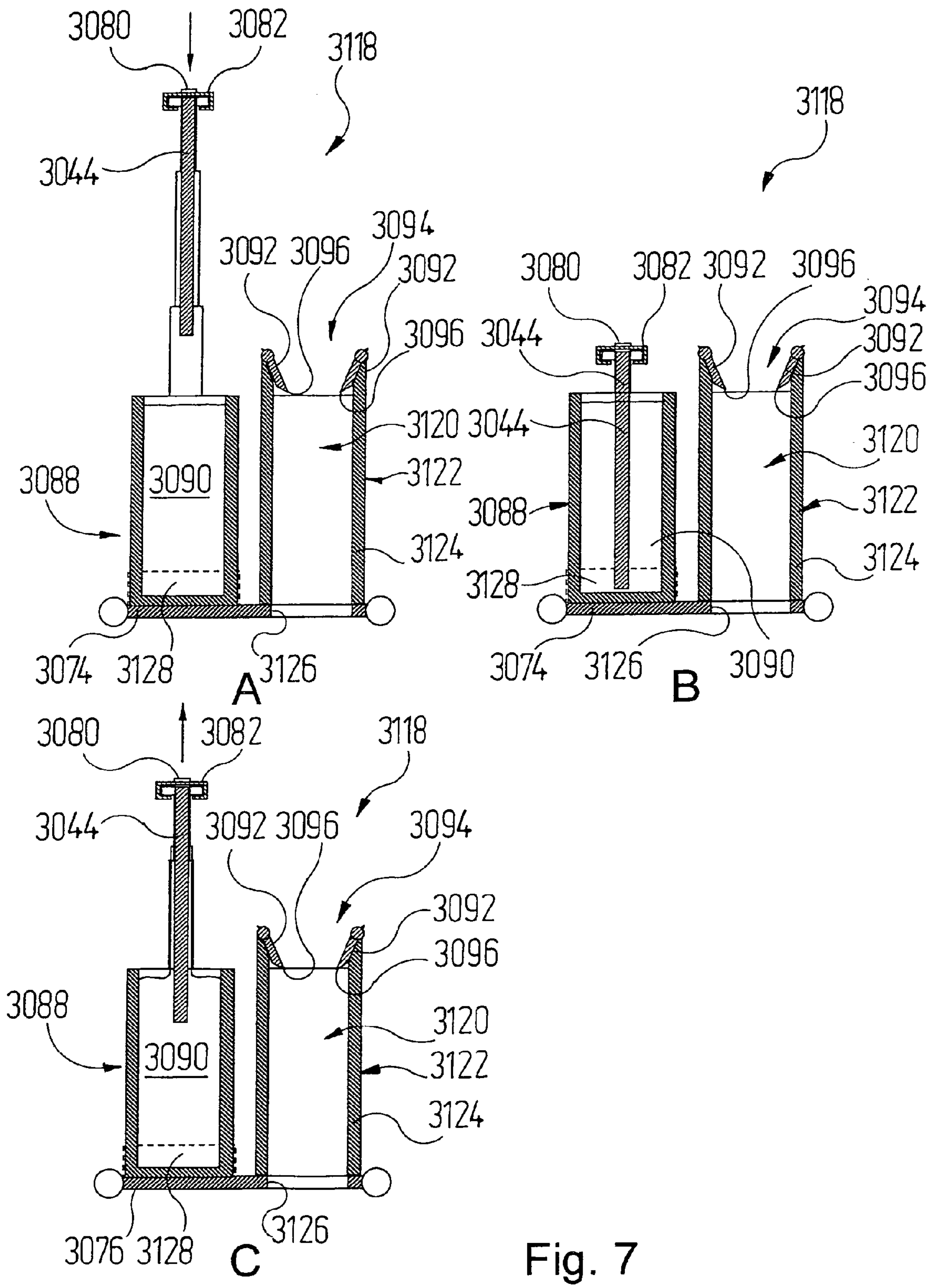
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Fig. 7

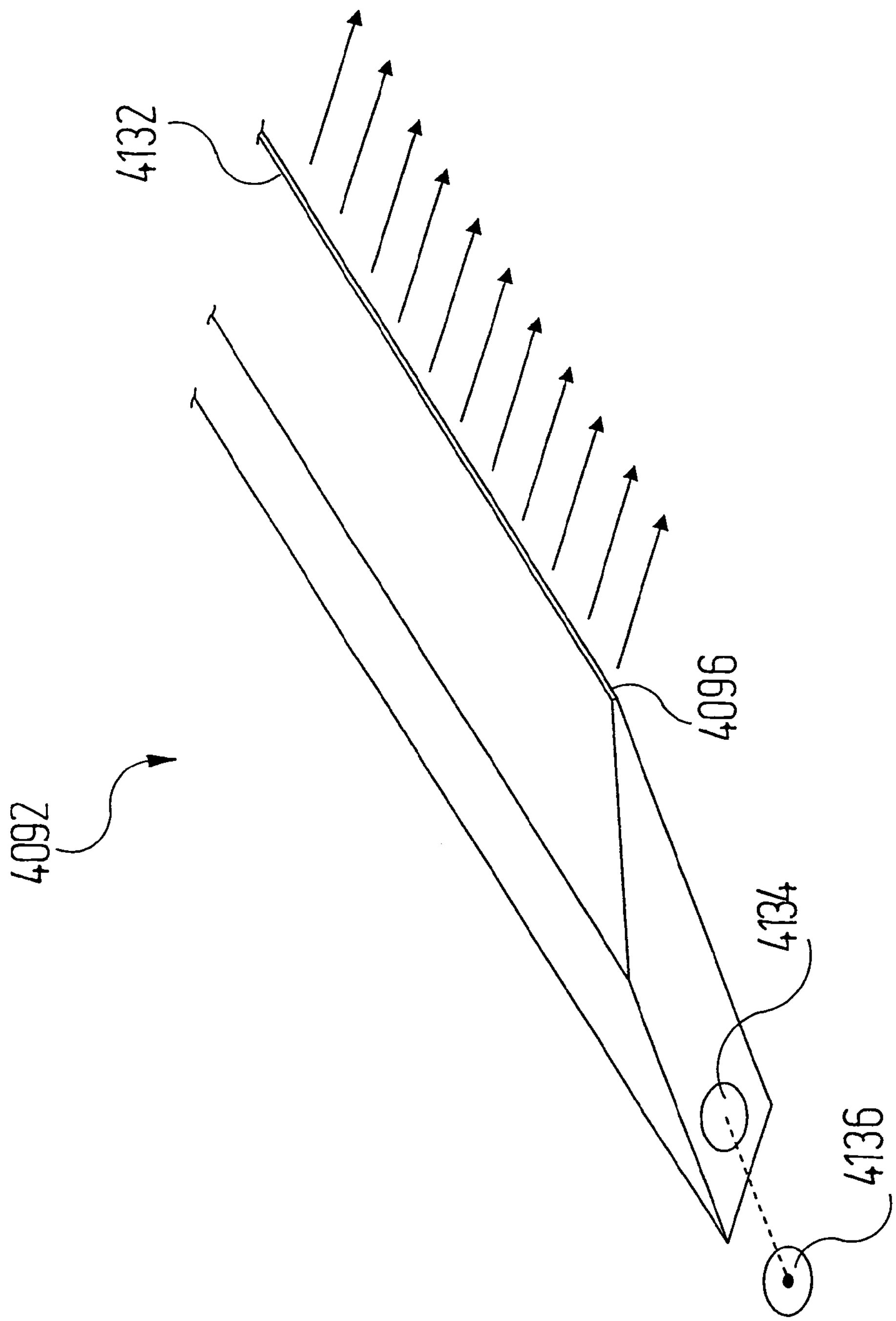

Fig. 8

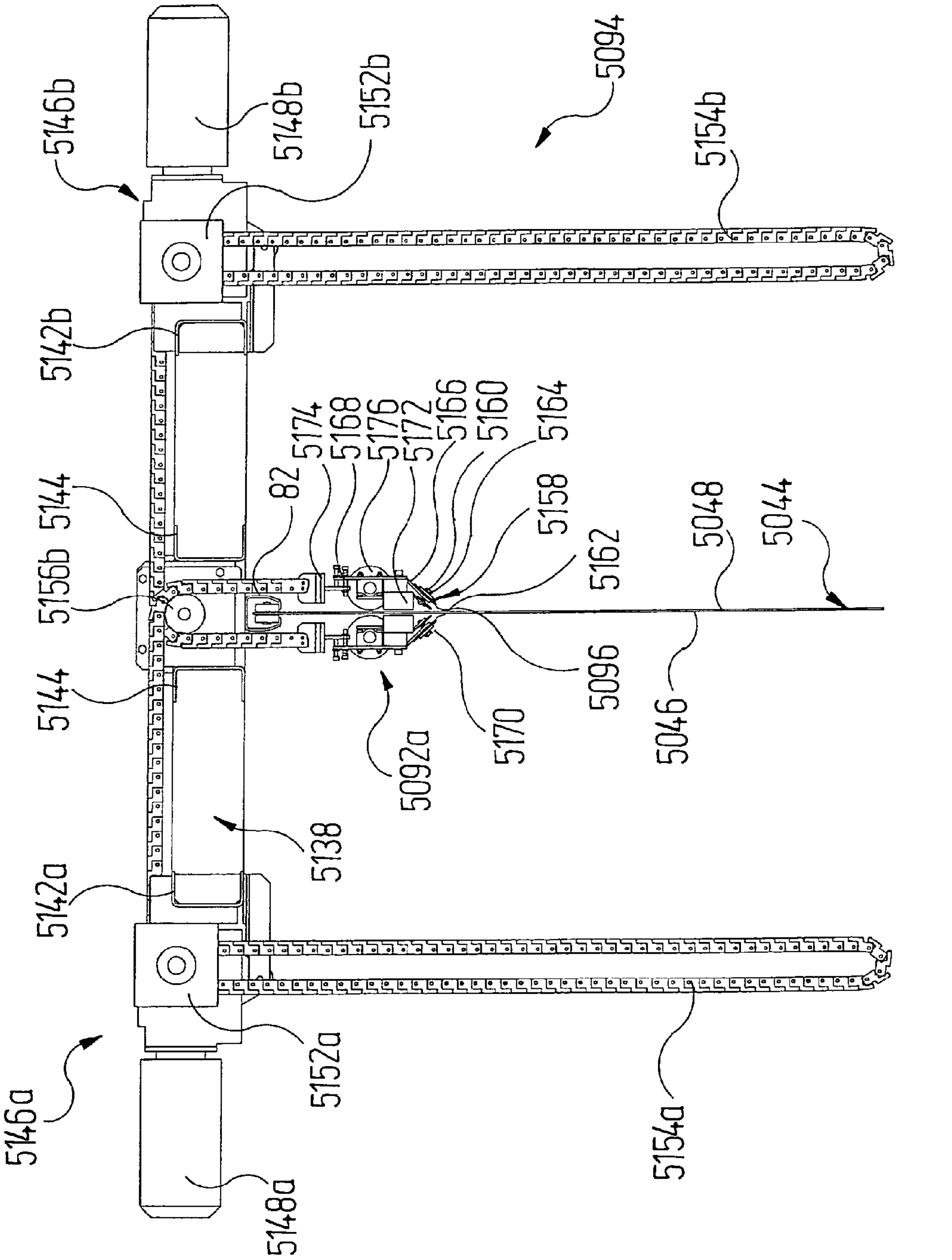
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Fig. 9

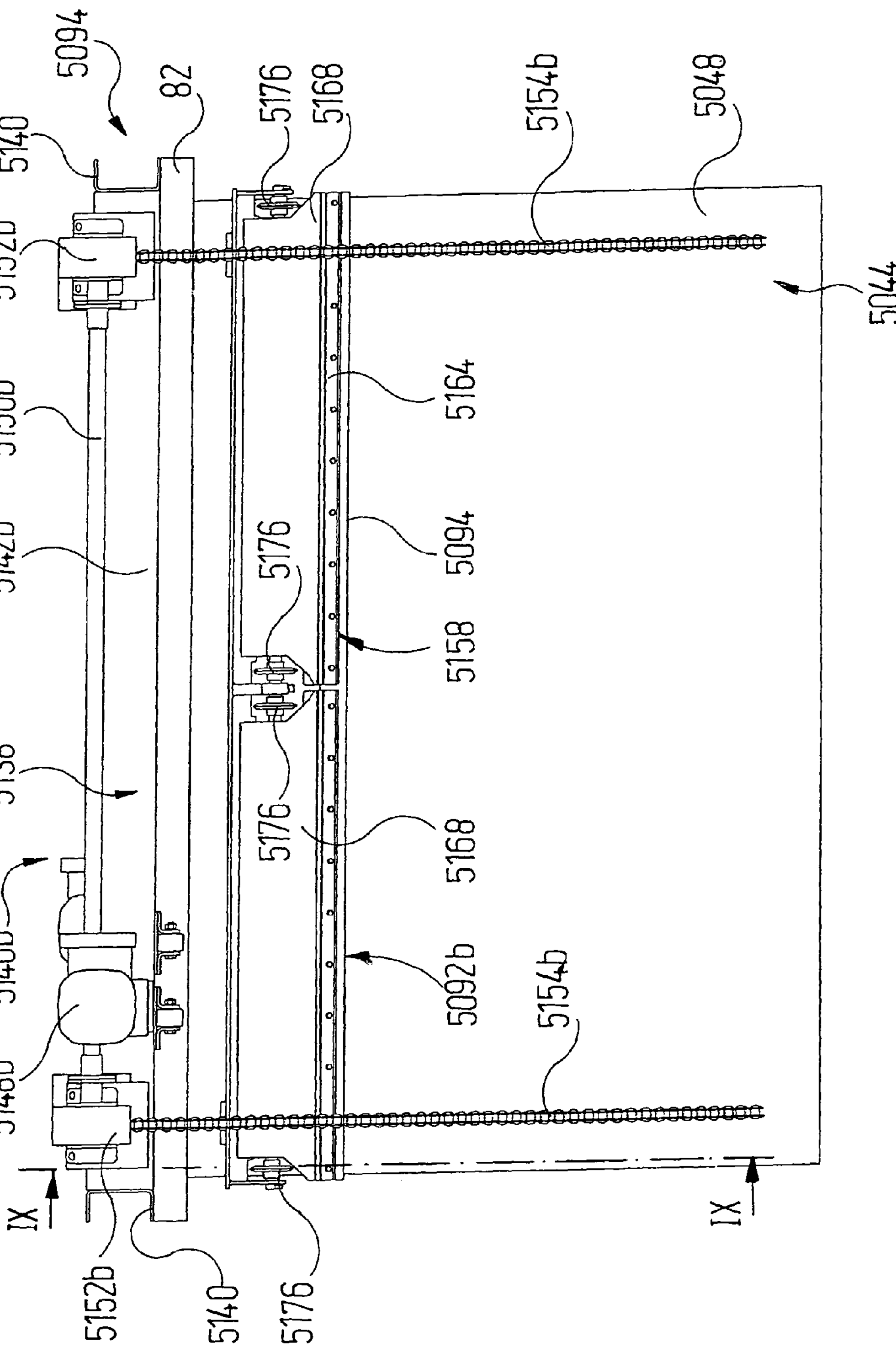
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Fig. 10

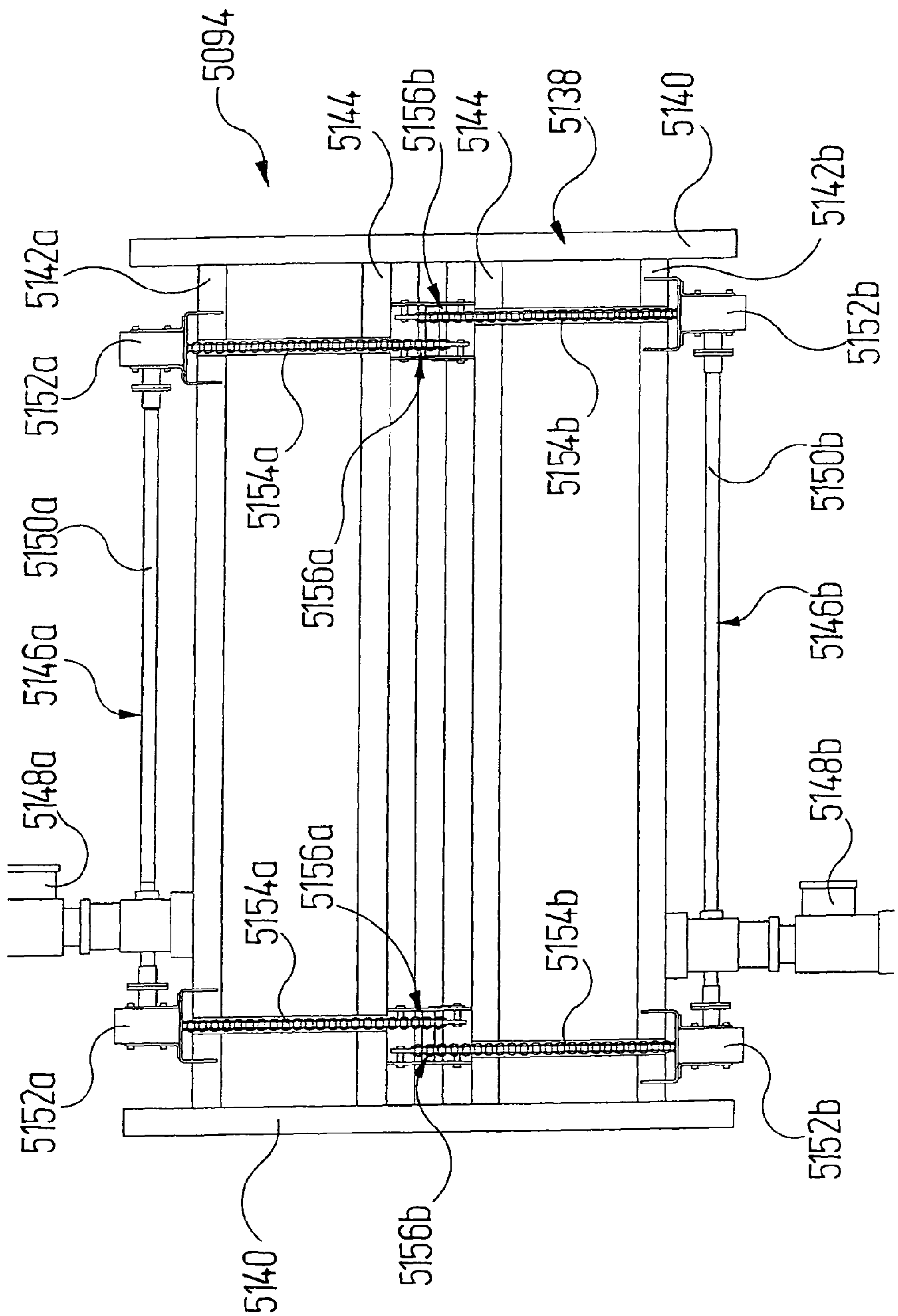
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Fig. 11

METHOD AND DEVICE FOR ELECTROSTATICALLY SEPARATING OVERSPRAY WITH AN ABSORPTION AGENT

RELATED APPLICATIONS

This application claims the filing benefit of International Patent Application No. PCT/EP2010/007120, filed Nov. 24, 2010, which claims the filing benefit of German Patent Application No. 10 2009 058 206.1 filed Dec. 15, 2009, the contents of both of which are incorporated herein by reference.

TECHNICAL FIELD AND BACKGROUND OF THE INVENTION

The invention relates to a method for separating overspray from the overspray-laden booth exhaust air of coating systems, particularly painting systems, in which the overspray is taken up by an air stream and conveyed to an electrostatically operating separating device where the bulk at least of the solids is separated from the overspray on at least one separating surface.

The invention moreover relates to a device for separating overspray from the overspray-laden booth exhaust air of paint systems having

a) at least one separating surface along which the booth exhaust air can be conveyed and which is connected to a terminal of a high voltage source;

b) an electrode device which is arranged in the air stream, is associated with the separating surface and is connected to the other terminal of the high voltage source.

The invention furthermore relates to a system for coating, particularly painting, objects, particularly vehicle bodies, having

a) a coating booth in which the objects can be acted upon by coating material and through which an air stream can be conducted, which takes up and removes resultant overspray particles of the coating material;

b) an electrostatically operating separating device.

When paints are applied manually or automatically to objects, a substream of the paint, which generally contains both solid bodies and/or binding agent as well as solvent, is not applied to the object. This substream is known among experts as "overspray". The overspray is taken up by the air stream in the paint booth and supplied for separation so that, if required, the air can be conveyed back to the coating booth after suitable conditioning.

Particularly in systems with a relatively high paint consumption, for example in systems for painting vehicle bodies, wet separation systems are preferably used. In commercially known wet separators, water flows together with the booth exhaust air coming from above to a nozzle accelerating the air stream. A swirling of the through-flowing booth exhaust air with the water takes place in this nozzle. During this procedure, the overspray particles largely pass over into the water so that the air exiting the wet separator has been substantially cleaned and the paint overspray particles remain separated in the water. They can then be recovered from this or disposed of.

In known wet separators, a relatively high amount of energy is needed to circulate the very large quantities of water required. Treating the rinsing water is costly due to the elevated use of paint-binding and detackifying chemicals and the disposal of paint sludge. Furthermore, as a result of the intensive contact with the rinsing water, the air absorbs a great deal of moisture which, in recirculating-air mode, in turn leads to a high energy consumption for treating the air.

In contrast, in commercially known devices of the type mentioned at the outset, a dry separation process is used in that paint overspray particles which are entrained by the booth exhaust air flowing past are ionised by the electrode device and, owing to the electrical field established between the separating surface and the electrode device, migrate to the separating surface on which they are separated. The paint overspray particles adhering to the separating surface can then be stripped off this mechanically, for example, and transported away.

The cleaning effect of such separators is very good. However, for continuous operation, it is necessary to always ensure that a sufficiently strong electrical field can build up between the separating surface and the electrode device, which is only possible up to a certain layer thickness of paint overspray on the separating surface, since such a layer has an insulating effect. However, the necessary continuous removal of the paint overspray from the separating surface involves complex structural measures and can be prone to faults. It is moreover possible that overspray will react, harden or dry on the separating surface so that it can no longer be simply removed by being stripped off the separating surface.

SUMMARY OF THE INVENTION

An object of the present invention, therefore, is to provide a method, a separating device and a system of the type mentioned at the outset, which address these problems.

This object may be achieved in the method of the type mentioned at the outset in that an electrically conductive material or material mix is used as the separating agent, which is applied to the at least one separating surface of the separating device and has a wax-like consistency at the operating temperature of the separating device.

Therefore, according to an embodiment of the invention, a wax-like material is used as the separating layer between the separating surface and the overspray so that this latter cannot come into contact with the separating surface. The specified nature of the separating agent means that the separating agent can be easily stripped or shaved off the separating surface, whereby overspray adhering to it is removed from the separating surface and can supplied for disposal or, if required, for treatment.

The consistency of the separating agent is selected so that it adheres, but does not stick, to the separating surface over its desired period of use. Here, a material is understood to be wax-like if its viscosity at the operating temperature is greater than approximately 2000 mPa s. The viscosity of the separating agent is preferably greater than 2500 mPa s, more preferably greater than 3000 mPa s and particularly preferably greater than 4000 mPa s.

The separating agent preferably has a consistency which is comparable to that of hard paraffin at the operating temperature. A block of chocolate also has a similar consistency, for example. This means that the separating agent is substantially solid at the operating temperature, with it being possible to shave flakes off the separating agent.

The separating agent alternatively has a plastic consistency at the operating temperature. For example, a suitable consistency is comparable with that of grease, paraffins such as Vaseline, soaps, waxes and gels. A separating agent of this type is kneadable or spreadable at the operating temperature.

The operating temperature is normally below approximately 28° C.

If the viscosity of the separating agent reduces at a temperature above the operating temperature, this can be utilised to apply the separating agent in a warmer state in a more liquid form to the separating surface, where it becomes more viscous at the operating temperature and remains substantially dimensionally stable. If the separating agent is sprayable in a warmer state, the separating agent can be applied accordingly by spraying.

It is favourable if the separating agent is substantially inert with respect to the separated solids. This prevents an undesired reaction between the separating agent and the overspray from the outset.

It has proven expedient if the separating agent comprises a grease, a paraffin, a soap, a wax or a gel.

If the aim is to avoid continuously stripping off the overspray, when a wax-like material is used as a separating agent it is possible for the separating agent with separated solids which is present on the at least one separating surface to be removed after an operating period and an unladen separating agent to be applied to the at least one separating surface. The separating surface can therefore be cleaned at intervals.

It is advantageous if separating agent with separated solids is removed by means of a stripping element, for which the at least one separating surface and the stripping element are moved relative to one another. The separating surface here is preferably moved with respect to a stationary stripping element. However, the relative movement can also be the other way round.

If the at least one stripping element comprises at least one exit opening, particularly an exit slot, from which a fluid, particularly compressed air, can exit, it is possible to avoid direct contact between the stripping element and the separating surface. This at least delays the contamination of the stripping element which increases over time.

The unladen separating agent is applied particularly advantageously in that the at least one separating surface is moved into a dip bath filled with separating agent and back out of this. Here, the separating agent is preferably at a temperature at which its viscosity is lower than it is at the operating temperature.

The separating agent can alternatively be sprayed or squirted onto the at least one separating surface.

The operating period can be approximately 2 hours, approximately 4 hours, approximately 6 hours, approximately 8 hours, approximately 10 hours or approximately 12 hours. When the separating agent is less laden with overspray, a longer operating period of up to several days is also possible as long as the insulating effect of the overspray does not influence the formation of the field lines in such a way that proper operation of the separating device is no longer possible. The corona current here is an indicator for the loading of the separating surface with overspray. The insulating effect of the overspray adhering to the separating agent causes the corona current to reduce as the thickness of the overspray layer increases. The corona current limit is generally determined empirically and is normally several milliamperes per high voltage electrode.

In a device of the type mentioned at the outset, the object mentioned above may be achieved in that

c) an electrically conductive material or material mix is applied to the at least one separating surface as a separating agent and has a wax-like consistency at the operating temperature of the device.

The statements regarding the method above apply to the separating agent.

The device advantageously comprises a separating-agent renewal device by means of which separating agent with separated solids which is present on the at least one separating surface can be removed and/or unladen separating agent can be applied to the at least one separating surface.

It is favourable here if the separating-agent renewal device comprises at least one stripping element which can be moved relative to the at least one separating surface. This means that either the stripping element can be moved with respect to the stationary separating surface or the separating surface can be moved with respect to the stationary stripping element.

It is advantageous here if the at least one stripping element is coupled to a linear chain drive.

The stripping effect is advantageously increased if holding means are provided by means of which the at least one stripping element can be held at least temporarily in contact with the at least one separating surface.

It has proven favourable here if the holding means comprise a magnet, particularly an electromagnet.

It is particularly advantageous if the separating-agent renewal device comprises a dip bath filled with separating agent and a conveyor device by means of which the at least one separating surface can be moved into the dip bath and back out of this.

The separating-agent renewal device can alternatively comprise a nozzle device by means of which the separating agent can be sprayed or squirted onto the at least one separating surface.

It is favourable if the at least one separating surface is the outer face of a plate-shaped separating element. A separating element of this type is easy to handle and provides large separating surfaces in relation to its volume.

Effective separation can be achieved if the electrode device has a corona portion and a field portion, with the corona portion being arranged upstream of the field portion in the flow direction of the overspray-laden booth air.

In the system mentioned at the outset, the object described above may be achieved in that

c) the electrostatic separating device is constructed according to one of the embodiments disclosed herein.

The system according to the invention therefore comprises a separating device having one or more of the features mentioned in relation to the device. The advantages which can be achieved thereby correspond to the advantages explained above with regard to the method and the device.

It is to be understood that the aspects and objects of the present invention described above may be combinable and that other advantages and aspects of the present invention will become apparent upon reading the following description of the drawings and detailed description of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Exemplary embodiments of the invention are explained in more detail below with reference to the drawings, which show:

FIG. **1** a paint booth of a surface treatment system with a first exemplary embodiment of an overspray separating device in a front view;

FIG. **2** a perspective view of four separating units and four electrode devices of the separating device of FIG. **1**;

FIGS. **3**A to **3**D sections through a separating-agent renewal device in different operating phases along the section line III-III in FIG. **1**;

FIG. **4** a view corresponding to FIG. **1** of a paint booth with a modified overspray separating device, as a second exemplary embodiment;

FIG. **5** a view corresponding to FIGS. **1** and **4** of a paint booth with an again-modified overspray separating device, as a third exemplary embodiment;

FIGS. **6**A to **6**D and FIGS. **7**A to **7**C sections through a modified separating-agent renewal device in different operating phases, with the sections corresponding to those of FIGS. **3**A to **3**D;

FIG. **8** a perspective view of a section of a stripping element of a stripping device on an enlarged scale, said stripping element being constructed as a compressed air nozzle;

FIG. **9** a section of a stripping device along the section line IX-IX in FIG. **10**;

FIG. **10** a side view of the stripping device of FIG. **9**;

FIG. **11** a plan view of the stripping device of FIGS. **9** and **10**.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail one or more embodiments with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiments illustrated.

Reference is firstly made to FIGS. **1** to **3**. In these, **2** denotes a paint booth, as a whole, of a surface treatment system in which vehicle bodies **4** are painted after they have been cleaned and degreased, for example, in pre-treatment stations (not shown specifically) arranged upstream in the paint booth **2**. The paint booth **2** rests on a steel structure **6** as is known per se.

The paint booth **2** comprises a paint tunnel **8**, which is arranged at the top and is delimited by vertical side walls **10** and a horizontal booth ceiling **12**, but is open at the end faces and towards the bottom such that overspray-laden booth exhaust air can flow downwards. The booth ceiling **12** is constructed in conventional manner as a lower delimitation of an air supply chamber (not illustrated) with a filter cover.

At the height of the lower opening **14** of the paint tunnel **8**, which is flanked by the lower edges of the side walls **10**, a steel structure **16** is arranged which supports a conveyor system **18** which is known per se and is not explained in further detail here. This can be used to transport vehicle bodies **4** to be painted from the entry side of the paint tunnel **8** to its exit side. Application devices (not shown specifically), by means of which the vehicle bodies **4** can be acted upon by paint in a manner known per se, are located inside the paint tunnel **8**. The lower opening **14** of the paint tunnel **8** is covered by an accessible grating (not shown specifically).

A system region **20** in which the overspray particles which are entrained by the booth air are separated from the booth air is located below the paint booth **2**. The system region **20** is delimited by a housing which is not provided with a specific reference numeral and is merely indicated as a dashed line in FIG. **1**.

The system region **20** comprises a flow region **22** which is open at the top towards the paint booth **2** and is produced by two air deflectors **24** and **26**. The left air deflector in FIG. **1** comprises a portion **24***a* which, from the outside in, has an initially moderate downward incline and merges into a portion **24***b* with a steep downward slope. The right air deflector **26** in FIG. **1** correspondingly has a portion **26***a* with a relatively slight downward incline and a steep portion **26***b*.

The air deflectors **24** and **26** lead downwards into a deflection region **28** in which a lower deflector **30** and a curved portion **32** continuing on from the air deflector **26** ensure that the booth air flowing from top to bottom flows in a direction from bottom to top through a separating chamber **34** arranged on the right in FIG. **1**, next to the first flow region **22**.

From distribution channels **36***a*, **36***b* mounted laterally adjacent to the air deflectors **24** and **26**, a separating fluid can flow onto the air deflectors **24** and **26** and downwards in a substantially cohesive layer along their outer surface facing the paint booth **2**. The separating fluid takes up some of the overspray entrained by the booth air whilst the booth air flows downwards from the paint booth **2** to the deflection region **28**.

The overspray-laden separating fluid flows over the lower deflector **30** into a collecting tank **38** arranged on that side of the air deflector **24** which is remote from the separating chamber **34**. From there, the separating fluid can be supplied to a cleaning and treatment process in which it is freed of the paint overspray in a manner known per se. The separating fluid can then be circulated back to the distribution channels **36**.

A separating unit **40** of an electrostatically operating separating device **42** is arranged in the separating chamber **34**. After the booth air has flowed through the separating unit **40**, it is conveyed from above the separating unit **40** to an air-conditioning device (not shown) by means of which the cleaned air is brought back to the correct temperature and humidity so that it can again be conducted to the air supply chamber above the paint booth **2** where it is mixed with unused fresh air if required. On the side remote from the collecting tank **38**, a third distribution channel **36***c*, from which separating fluid flows over that part of the lower deflector **30** which extends below the separating unit **40**, is provided in the lower deflector **30**.

The separating unit **40** comprises a plurality of rectangular separating plates **44** (of which four are shown in FIG. **2**) arranged in succession in the longitudinal direction of the separating chamber **34**. The respective opposing outer faces of the separating plate **44** form separating surfaces **46** and **48** of which only those of the separating plate **44** shown on the far left are provided with reference numerals in FIG. **2**.

At its upper edge, the separating plate **44** supports a plurality of rollers **50** on each side, of which one can be seen on each side only in FIG. **2** and likewise only the rollers of the separating plate **44** shown on the far left in the Figure have reference numerals. For each separating plate **44**, the separating unit **40** comprises a respective guide rail **52** constructed as a profile with a C-shaped cross-section. The guide rails **52** are arranged horizontally and such that the opening of the "C" points downwards. The separating plates **44** run with their rollers **50** in a respective guide rail **52** and can be moved to the right in FIG. **1** out of the separating chamber **34** and into a separating-agent renewal region **54** (cf. FIG. **1**). In their operating position, the separating plates **44** are arranged in their associated guide rail **52** in the separating chamber **34** and are locked therein.

In the separating unit **40**, the guide rails **52** are arranged parallel next to one another in such a way that a respective spacing remains between two adjacent separating plates **44** which is sufficient to enable two adjacent separating plates **44** to receive a respective electrode device **56** between them. Of these, only the electrode device shown on the far right in FIG. **2** is provided with a reference numeral.

Each electrode device **56** is connected to a terminal of a high voltage source **58** associated therewith, of which only one is indicated schematically in FIG. **1**. The separating plates **44** are at ground potential by way of the other terminal of the high voltage source.

In a modification, all the electrode devices **56** can also be supplied by a single common high voltage source.

Each electrode device **56** comprises two linear mutually parallel-extending electrode strips **60***a*, **60***b*. These hold a grid electrode **64** in a field portion **62** of the electrode device **56**, whereof the edges extending between the electrode strips **60***a*, **60***b* are perpendicular thereto. In a corona portion **66** of the electrode device **56**, the electrode strips **60***a*, **60***b* hold a plurality of corona wires **68** acting as a discharge electrode. The corona wires **68** extend perpendicularly to the electrode strips **60***a*, **60***b* in a plane specified thereby and are arranged at equal spacings from one another.

The number of corona wires **68** of the electrode device **56** and their spacing from one another can vary depending on the separation behaviour of the overspray particles. In the present exemplary embodiment, four corona wires **68** are provided per electrode device **56**.

As shown in FIGS. **1** and **2**, the electrode devices **56** as a whole have an extent which corresponds approximately to the extent of the separating plates **44** of the separating unit **40**.

Each separating plate is provided on both separating surfaces **46** and **48** with a respective layer **70** of an electrically conductive wax-like material or material mix which acts as a separating agent and prevents separated overspray from depositing on the separating surfaces **46**, **48** of the separating plates **44**. The layers **70** are each between 0.2 mm and 2 mm thick. In practice, a 1 mm thickness of the layers **70** has proven expedient.

The term wax-like material is used here to refer to a material which has a plastic consistency at the operating temperature of the separating device **38**. The separating agent is preferably kneadable or spreadable at the operating temperature. The wax-like material should therefore be comparatively pliable at the operating temperature of the separating device **38**, yet substantially dimensionally stable and it should only exhibit a very limited flow behaviour, if at all. The operating temperature of the separating device **38** is generally below 28° C., although it can also be higher depending on the application.

A material is selected here whereof the viscosity is moreover reduced at temperatures above the operating temperature and is less at a temperature above the operating temperature than it is at the operating temperature.

In practice, for example, greases, particularly paraffins, soaps, waxes and gels, have proven useful as separating agents. As a paraffin, it was possible to achieve good results with Vaseline. Waxes can be produced both from natural sources and also synthetically and can be defined according to several mechanico-physical properties. The term wax is used in particular here to refer to a material which is kneadable at the operating temperature of the separating device **40**, melts without decomposing at higher temperatures and is less viscous, i.e. slightly liquid, slightly above the melting point.

The conductivity of the separating agent is essentially such that a charge can flow and is preferably in the range of 50 to 5000 μS/cm, particularly 1000 to 3000 μS/cm. If required, the conductivity of the separating agent can be adjusted with added substances, for example salts.

In addition to the separating unit **40**, the separating device **42** has a separating-agent renewal device **72** which is arranged in the separating-agent renewal region **54** (see FIG. **1**).

The separating-agent renewal device **72** comprises a carriage **74** which can be moved on a rail pair **76** which extends in the longitudinal direction of the paint booth **2** so that the carriage **74** can be moved along the entire separating unit **40**. The carriage **74** is driven by means of a motor/control unit **78**. The motor/control unit **78** at the same time serves to operate a telescopic device **80** which is carried along by the carriage **74** and by means of which a horizontally extending rail profile **82** can be raised or lowered in the vertical direction. This is indicated in FIG. **1** by a corresponding double-headed arrow. The rail profile **82** corresponds in cross-section to the guide rails **52** of the separating unit **40**. The telescopic device **80** is arranged on that side of the carriage **74** which is remote from the separating unit **40**.

A clamping shoe **84** is movably guided in the rail profile **82**, as shown by a double-headed arrow in FIG. **1**. The clamping shoe **84** is likewise controlled by the motor/control unit **78**. The carriage **74** moreover supports a dip bath **88** which can be heated by means of a heating device **86** and is filled with separating agent **90**. The separating agent **90** in the dip bath **88** is heated to a temperature at which it has a viscosity which enables the separating plates **44** to be coated by being dipped in the separating agent **90**. On its edges which extend horizontally and perpendicularly to the movement direction of the carriage **74**, the dip bath **88** supports stripping elements **92** of a stripping device **94** (shown in section in FIG. **3**) which extend longitudinally to the edges. The stripping elements **92** are pivotably mounted at the respective edge of the dip bath **88** and can be moved with their upper stripping edges **96** towards and away from one another between a stripping position and a release position. In their stripping position, a spacing is maintained between the stripping edges **96** which corresponds to the thickness of the separating plates **44**.

Arranged below the rail pair **76**, there is a revolving continuous conveyor belt **98** which likewise extends in the longitudinal direction of the paint booth **2** and leads to a collecting region (not shown specifically).

The paint booth **2** explained above now operates as follows:

When painting the vehicle bodies **4** in the paint tunnel **8**, the booth air located there is laden with paint overspray particles. These can still be liquid and/or tacky, or they can be more or less solid. The booth exhaust air which is laden with paint overspray flows through the lower opening **14** of the paint tunnel **8** into the first flow region **22** of the lower system region **20**. This air is conducted there to the deflection region **28** by means of the air deflectors **24**, **26**, with some of the overspray already having been taken up by the separating fluid flowing down on the air deflectors **24**, **26**. The booth air is deflected through the deflection region **28** in the direction of the separating unit **40** of the separating device where it flows through between adjacent separating plates **44**.

Corona discharges take place at the corona wires **68** of the electrode devices **56** in a manner known per se, which results in effective ionisation of the overspray particles in the booth exhaust air flowing past.

The ionised overspray particles pass over the separating plates **44** which are at ground potential and the grid electrodes **64** extending between them in the field portion **62** of the electrode devices **56**. As a result of the electrical field produced between the grid electrode **64** and the separating plates **44**, the ionised overspray particles separate on the separating-agent layer **70** on the separating plates **44** and, for the most part, remain adhered to the separating-agent layer **70**.

Overspray which may have dropped downwards from the separating plates **44** is taken up by the separating fluid flowing over the lower deflector **30** and conducted to the collecting tank **38**.

Most of the ionised overspray particles are already separated in the corona portion **66** of the electrode device **56** on the separating plates **44**. The electrical field which is present between the corona wires **68** and the respective separating plate **44** of the separating unit **40** is, however, more inhomogeneous than the electrical field in the region of the grid electrode **64**, which is why a more targeted separation of the ionised overspray particles takes place at the corresponding separating plate **44**. As a result, the overspray particles which have passed over the corona portion **66** are effectively separated in the field portion **62**.

As mentioned above, the air which is cleaned as it passes through the separating unit **40** is supplied back to the paint tunnel **8** after a certain conditioning.

For correct operation of the separating unit **40**, it is necessary to ensure that a sufficiently strong electrical field can build up between the separating plates **44** and the electrode devices **56**, which is only possible up to a certain layer thickness of the separated paint overspray on the separating surface since such a layer has an insulating effect. The strength of the insulating effect of the accumulated overspray layer can be determined by way of the current requirement of the separating unit **40** generating the corresponding corona current, which decreases over time.

Moreover, solid particles and binding-agent constituents from the separated overspray migrate from the surface of the separating-agent layers **70** into the separating agent. After a certain operating period, there is a risk that solid particles will migrate as far as the separating surfaces **46**, **48** and deposit there, which would have a substantial adverse effect on the functional capability of the separating unit **40** and necessitate costly cleaning and maintenance.

Therefore, if the insulating effect of the separated overspray is too great and/or it is no longer possible to ensure perfect operation of the separating unit, the separating-agent layers **70** with overspray now adhering thereto are removed from the separating plates **44** and the separating surfaces **46**, **48** of the separating plates **44** are provided with new, unused separating agent.

To this end, the rail profile **82** on the telescopic device **80** of the separating-agent renewal device **72** is brought into a position in which it is aligned with the guide rail **52** of the separating plate **44** to be cleaned. For this, the carriage **74** is moved into a corresponding position on the rail pair **76** on the one hand and the telescopic device **80** is extended accordingly on the other.

The clamping shoe **84** is moved forwards in the rail profile **82** in the direction of the separating plate **44** where it engages with this. The above-mentioned locking of the separating plate **44** in the guide rail **52** is released. The clamping shoe is now moved back again in the direction of the telescopic device **80**, drawing the separating plate **44** with it. The spacing between the rail profile **82** and the corresponding guide rail **52** is small enough for the separating plate **44** to be able to move easily on its rollers **50** out of the guide rail **52** and into the rail profile **82**.

The separating plate **44** is moved into a position in the rail profile **82** in which it is above the dip bath **88** with the stripping device **94**. This position of the separating plate **44** is shown by dotted lines in FIG. **1**.

The stripping elements **92** of the stripping device **94** are brought into their stripping position and the separating plate **44** is dipped into the heated separating agent **90** in the dip bath **88** by means of the telescopic device **80**. This is shown in FIG. **3**A.

As can be seen here, on its way downwards, the separating plate **44** moves past the stripping elements **92**. As a result, the separating-agent layers **70** which are adhering to the separating plate **44** with the overspray **100** separated on them are stripped from the separating plate **44** and fall downwards onto the conveyor belt **98**, which is not shown in FIGS. **3**A to **3**D.

As mentioned above, the separating agent which has fallen with the overspray from the separating plate **44** is conveyed by the conveyor belt **98** to a collecting region. From there, it is supplied for treatment. To this end, the material mix can be heated, for example, causing the separating agent to become liquid. The resultant material mix of liquefied separating agent and overspray can then be removed, for example by suitable filters.

The separating-agent/overspray mixture can alternatively be centrifuged, possibly under pressure, and the resultant phases can be separated from one another after this. The separating agent which is cleaned in this way can then be kept flowable by a corresponding heat supply and guided back to the dip bath **88** in a circuit. The filtered-off overspray can in turn be supplied for further treatment if required or for disposal as is known per se.

In its lowest position, which is illustrated by dashed lines in FIG. **1**, the separating plate **44** is now freed of the used separating-agent layer **70** and overspray **100** adhering thereto and is dipped into the separating agent **90** in the dip bath **88**.

The stripping elements **92** are now brought into their release position (see FIGS. **3**B and **3**C).

The telescopic device **80** is now used to raise the separating plate **44** again and move it out of the separating agent **90** (see FIG. **3**D). Separating agent adhering to the separating plate **44** cools quickly in the environment, which is cooler than the dip bath, so that it is at its working viscosity when it exits the separating-agent bath and adheres as a new separating-agent layer **70** to the separating plate **44** when this latter is moved completely out of the dip bath **88**.

The separating plate **44**, which is now provided with a new and unladen separating-agent layer **70**, is then moved back into that guide rail **52** of the separating unit **40** which is associated therewith, in that the telescopic device **80** is extended accordingly and the clamping shoe **84** is moved in the direction of the separating unit **40**. When the separating plate **44** assumes its operating position of its guide rail **52**, it is locked there, whereupon the clamping shoe **84** releases the separating plate **44**. The procedure can then be repeated with another separating plate **44** which has to be freed of the separating agent with overspray adhering to it.

In a modification, the separating-agent renewal device comprises a plurality of dip baths **88** and a plurality of telescopic devices **80** with a rail profile **82**, so that a plurality of separating plates **44** can be treated at the same time.

As a second exemplary embodiment, FIG. **4** shows a paint booth **1002** with which a separating device **1042** is associated. Components which correspond to those of FIGS. **1** to **3** have the same reference numerals plus 1000.

Contrary to the paint booth **2**, there is no deflection region in the lower system region **1020**. Instead, the separating chamber **1034** in which the separating unit **1040** is arranged adjoins the flow region **1022** provided by the air deflectors **1024** and **1026**. The lower booth opening **1014** extends here between the upper ends of the air deflectors **1024** and **1026**, which then diverge downwards to the separating chamber **1034**.

The lower booth opening **1014** is flanked by separating sheets **1102** which slope moderately downwards in an outward direction and are shaped on the outside to form a collecting channel **1102***a*. A separating fluid can be supplied to the separating sheets **1102** from distribution channels **1036** which are arranged adjacent to the air deflectors **1024** and **1026**.

In this exemplary embodiment, the booth air flows from top to bottom through the separating unit **1040**, which is why the electrode devices **1056** are arranged accordingly in such a way that the corona portion **1066** is at the top and the field portion **1062** is at the bottom.

The separating plates **1044** are not guided in horizontal guide rails, but are detachably suspended in holding units

1104 which are arranged a short distance below the lower ends of the air deflectors **1024** and **1026**. The holding units **1104** can be controlled in such a way that they optionally hold or release the separating plates **1044**.

Contrary to the separating-agent renewal device **72** according to FIGS. **1** and **3**, the separating-agent renewal device **1072** does not comprise a telescopic device. Instead, driven clamping roller pairs **1106**, which are rotatable about horizontal rotational axes, are provided to lower and raise the separating plates **1044**. These clamp the separating plates **1044** in the edge region in a conveying position on the opposing separating surfaces **1046**, **1048** and can lower or raise them by rotating in the corresponding direction. Lateral guide rails **1101** ensure that the separating plates **1044** are guided in the lateral direction.

It is alternatively possible, for example, for the separating plates **1044** to be additionally grooved in the edge region or provided with cutouts and, instead of the clamping roller pair **1106**, to use pinions engaging in the grooved portions or cutouts so that the separating plate **1044** is conveyed in a manner similar to that of a film. In this case, it can also be ensured that the separating plate **1044** is guided in the lateral direction without the vertical guide rails **1101**.

So that there is no interference from the clamping roller pair **1106** when the carriage **1074** is moved in the longitudinal direction of the paint booth **1002**, they can moreover be moved in the horizontal direction laterally alongside the separating unit **1040**.

Therefore, if a separating plate **1004** needs to be cleaned, the clamping roller pair **1106** are moved into their conveying position and the separating plate **1044** is released by the holding units **1104** and moved downwards into the dip bath **1088** through a corresponding rotation of the clamping roller pair **1106**. The stripping elements **1092** assume their stripping position here.

This aside, the separating plates **1044** are cleaned and newly coated with separating agent in a manner analogous to the procedure explained above with reference to FIGS. **1** to **3**.

As a third exemplary embodiment, FIG. **5** shows a paint booth **2002** with which a separating device **2042** is associated. Components which correspond to those of FIGS. **1** to **3** have the same reference numerals plus 2000.

The basic structure corresponds to that of the paint booth **2** according to FIG. **1**. However, contrary to this, the separating-agent renewal region **2054** is arranged above the separating unit **2040**. For this purpose, a respective horizontal rail **2108** is provided on the right and left hand sides above the separating unit **2040** and supports a modified separating-agent renewal device **2110** such that it is movable in the longitudinal direction of the paint booth **2002**.

The separating-agent renewal device **2110** comprises a downwardly pointing stripping device **2094** with stripping elements **2092** of which only one can be seen in FIG. **5**. Their stripping edges (not shown in FIG. **5**) point downwards. A nozzle arrangement **2112** is moreover provided which comprises a plurality of nozzles **2114** which are illustrated as a dashed circle and are arranged on both sides of a through-slot through which a separating plate **2044** can be guided. Only one of the nozzles is provided with a reference numeral in FIG. **5**.

For raising and lowering a separating plate **2044**, two clamping roller pairs **2106***a* arranged below the stripping device **2094** and two clamping roller pairs **2106***b* arranged above the nozzle device **2112** are provided so that a separating plate can be transferred from the lower clamping roller pairs **2106***a* to the upper clamping roller pairs **2106***b* and vice versa. Holding units **2104** are arranged below the lower clamping roller pairs **2016***a* here.

For raising and lowering a separating plate **2044** to be cleaned, the separating-agent renewal device **2110** is firstly moved into a position above the separating plate **2044** in question. The separating plate **2044** is then gripped by the lower clamping roller pairs **2106***a* and conveyed upwards after the holding units **2104** have released the separating plate **2044**. The stripping elements **2092** assume their stripping position here so that separating agent with overspray adhering to it is stripped from the separating plate **2044** and falls down onto the conveyor belt **2098**.

After the separating plate **2044** has been freed of separating agent, it is moved back downwards at which the nozzle arrangement **2112** is now activated. The nozzles **2114** are supplied from a heatable separating-agent reservoir **2116** and spray or squirt separating agent onto both separating surfaces **2046**, **2048** of the separating plate **2044**. If required, the nozzles **2114** can also be heated to keep the separating agent at a temperature at which it can be sprayed or squirted.

In a modification which is not shown specifically here, instead of the nozzle arrangement **2112** a roller arrangement or a doctor-blade arrangement is provided by means of which separating agent can be applied to the separating plate **2004** by a roller or a doctor blade.

In a corresponding roller arrangement, it is possible, for example, for a respective rotating roller which dips in each case into a separating-agent bath to be arranged on each side of the separating plate **2044**. The separating plate **2044** is pushed through between these rotating rollers, with the rotating rollers being arranged such that the separating surfaces **2046** and **2048** are thereby uniformly wetted with separating agent.

In a corresponding doctor-blade arrangement, the separating agent is preferably applied to the separating surfaces **2046** and **2048** in paste-like form by means of a doctor blade.

The operating periods over which a separating plate **44**, **1044**, **2044** which has been freshly coated with separating agent can be used, and after which existing separating agent with separated solids is removed and unladen separating agent is applied to the separating plate **44**, **1044**, **2044**, depend, among other things, on the behaviour of the overspray. In practice, operating periods of 2 hours, 4 hours, 6 hours, 8 hours, 10 hours and 12 hours or even several days have proven possible.

FIGS. **6**A to **6**D and **7**A to **7**C show a separating-agent renewal device **3118** as a modification of the separating-agent renewal device **72**. In these, components which correspond to the components of the separating-agent renewal device **72** have the same reference numerals plus 3000, with the separating surfaces **3046** and **3048** of the separating plate **3044** shown only being provided with reference numerals in FIG. **6**A.

In the separating-agent renewal device **3118**, the dip bath **3088** and the stripping device **3094** are arranged in succession on the carriage **3074** as seen in the longitudinal direction of the paint booth **2**. To this end, the carriage **3074** has correspondingly greater dimensions than the carriage **74** of the separating-agent renewal device **72**.

The stripping device **3094** comprises a receiving region **3120** for separating agent and overspray, which is arranged below the stripping elements **3092** and is delimited by four side walls **3124** forming a protective box **3122** which is open at the top and bottom.

The carriage **3072** moreover has a passage **3126** which complements the internal cross-section of the protective box **3122**.

The telescopic device **3080** rests on a positioning carriage **3128** which can be moved on the carriage **3074** parallel to its movement direction. The positioning carriage **3128** is only indicated schematically and by dashed lines in FIGS. **6** and **7**.

In the separating-agent renewal device **3118**, the separating plate **3044** is moved in the rail profile **3082** into a position in which it is above the protective box **3122** with the stripping device **3094**. To this end, the positioning carriage **3128** is moved into a corresponding position on the carriage **3074**.

The stripping elements **3092** of the stripping device **3094** are firstly in their release position. The telescopic device **3080** is used to move the separating plate **3044** downwards into the protective box **3122** between the stripping elements **3092** without the stripping elements **3092** coming into contact with the separating-agent layers **3070** or the overspray **3100** adhering thereto. This is shown in FIG. **6**A.

When the separating plate **3044** assumes its lowest position (shown in FIG. **6**B), the stripping elements **3092** are brought into their stripping position.

The separating plate **3044** is then moved back upwards by means of the telescopic device **3080** and, on its upward path, moves past the stripping elements **3092** which are now lying with their stripping edges **3096** against the separating plate **3044**. The separating-agent layers **3070** adhering to the separating plate **3044** are thus stripped off of the separating plate **3044** with the overspray **3100** adhering to them and fall downwards through the protective box **3122** and the passage **3126** in the carriage **3074** onto the conveyor belt **98**, **1098**, **2098**, which is not shown in FIGS. **6**A to **6**D. This is shown by material pieces **3130** (see FIGS. **6**C and **6**D).

The separating plate **3044** which is free of the used separating-agent layer **3070** and the overspray **3100** adhering thereto is now located in its highest position above the stripping device **3094** again.

The positioning carriage **3128** is then moved into a position such that the separating plate **3044** is located above the dip bath **3088** (see FIGS. **6**D and **7**A). The separating plate **3044** is firstly dipped into the dip bath **3088** containing the separating agent **3090** by means of the telescopic device **3080** (see FIG. **7**B) and then moved back out of this (see FIG. **7**C).

As already explained above, separating agent adhering to the separating plate **3044** cools quickly in the environment, which is cooler than the dip bath, so that it is at its working viscosity when it exits the separating-agent bath and adheres as a new separating-agent layer **3070** to the separating plate **3044** when this latter has been moved completely out of the dip bath **3088**.

FIG. **8** shows a stripping element **4092** as a modification, which can be used as an alternative to the stripping devices **94**, **1094**, **2094** and **3094** shown in FIGS. **1** and **3** to **7**.

The stripping element **4092** comprises an air outlet slot **4132** extending along its stripping edge **4096**. This air outlet slot is in communication with a compressed air connection **4134** by way of which the stripping element **4092** can be supplied with compressed air from a compressed air source **4136**, which is then discharged by way of the air outlet slot **4132**. This is shown by the arrows in FIG. **8**. The compressed air can optionally be heated to a temperature such that the separating agent is more liquid when it comes into contact with this heated compressed air.

If stripping elements **4092** of this type are used for stripping the overspray-laden separating-agent layers, their stripping edges **4096** no longer have to come into mechanical contact with the respective separating plate **44**, **1044**, **2044** or **3044**. Instead, a spacing can remain between the respective stripping edge **4096** with the air outlet slot **4132** and the separating plate **44**, **1044**, **2044** or **3044**. The overspray-laden separating-agent layers are, as it were, blown away from the separating plate **44**, **1044**, **2044** or **3044** by the air stream generated. The remaining spacing enables the contamination of the stripping elements **4092** to be reduced by comparison with the stripping elements **92**, **1092**, **2092** or **3092** which come directly into contact with the separating agent and the overspray.

A further option for removing the overspray-laden separating agent layers from the separating plates **44**, **1044**, **2044** or **3044** consists in converting the separating agent by heating into a liquid state in which it flows off the respective separating plate **44**, **1044**, **2044** or **3044** together with the overspray. This can be carried out for example using heating elements or exposure to IR radiation instead of, or in addition to, the stripping elements **92**, **1092**, **2092**, **3092** or **4092**. Inductive heating of the separating plates **44**, **1044**, **2044** or **3044** is also conceivable.

In FIGS. **9** to **11**, a further exemplary embodiment of a stripping device is denoted by **5094**. Whereas, in the stripping devices **94**, **1094**, **2094** and **3094** described above, the separating plates **44**, **1044**, **2044** and **3044** are each moved with respect to the stationary stripping elements **92**, **1092**, **2092** and **3092**, in the stripping device **5094** the associated stripping elements **5092***a*, **5092***b* are moved from top to bottom with respect to the separating plate **5044** to be cleaned.

The stripping device **5094** is explained below with reference to the separating-agent renewal device **72** according to FIGS. **1** to **3**. However, it can also be used accordingly in the separating-agent renewal devices **1072**, **2110** or **3118** instead of the stripping devices **1094**, **2094** and **3094**. For the sake of clarity, only the rail profile **82** of the separating-agent renewal device **72** is shown in FIGS. **9** and **10**.

The stripping device **5094** comprises a supporting frame **5138**, which is carried along by the carriage **74** and is arranged stationary above the highest position of the rail profile **82**.

The supporting frame **5138** is symmetrical to a vertical plane which extends through the longitudinal axis of the rail profile **82** in the assembled state of the supporting frame **5138**. The supporting frame **5138** comprises two outer transverse beams **5140** extending perpendicularly to this plane. Two outer longitudinal beams **5142***a*, **5142***b* and two inner connecting beams **5144** extend between the transverse beams **5140**. This is shown particularly clearly in FIG. **11**.

The longitudinal beams **5142***a*, **5142***b* each support a lifting/lowering device **5146***a*, **5146***b* for one of the two stripping elements **5092***a*, **5092***b* in each case. Each lifting/lowering device **5146***a*, **5146***b* comprises a motor **5148***a*, **5148***b* which drives a rotary shaft **5150***a*, **5150***b* extending parallel to the longitudinal beams **5142**. The rotary shafts **5150***a*, **5150***b* lead, at each end, into a respective drive block **5152***a*, **5152***b* which moves a respective linear chain **5154***a*, **5154***b*. The lifting/lowering device **5146***a* therefore comprises two linear chains **5154***a*, and the lifting/lowering device **5146***b* therefore comprises two linear chains **5154***b*. The lifting/lowering devices **5146***a*, **5148***b* thus form linear chain drives for the stripping elements **5092***a*, **5092***b*.

The drive blocks **5152***a*, **5152***b* transmit the rotational movement of the rotary shafts **5150***a*, **5150***b* in known manner to the linear chains **5154***a*, **5154***b* so that these are driven according to the direction of rotation of the rotary shafts **5150***a*, **5150***b*. The linear chains **5154***a*, **5154***b* are constructed in known manner such that they can transmit a force in both the pull direction and the push direction.

Each of the two linear chains **5154***a* is connected to the supporting frame **5138** at one end and to the stripping element **5092***a* at the other end. Accordingly, each of the two linear chains **5154***b* is connected to the supporting frame **5138** at one end and to the stripping element **5092***b* at the other end.

The drive blocks **5152***a* of the lifting/lowering device **5146***a* are arranged closer to one another on the longitudinal beam **5142***a* than the drive blocks **5152***b* on the longitudinal beam **5142***b*, so that the linear chains **5154***a* and **5154***b* extend offset from one another as seen in the direction of the transverse beam **5140**, which is shown particularly clearly in FIG. **11**.

From the drive blocks **5152***a*, **5152***b* above the supporting frame **5138**, the linear chains **5154***a*, **5154***b* each run vertically downwards via an idle roller **5156***a*, **5156***b* to the respectively associated stripping element **5092***a* and **5092***b*.

The stripping elements **5092***a* and **5092***b* are of an identical construction and will now be explained using the example of the stripping element **5092***b* shown on the right in FIG. **9**, with a separating plate **5044** arranged between the stripping elements **5092***a* and **5092***b* being used as a reference.

The stripping element **5092***b* comprises a stripping sheet **5158** which extends horizontally when in use and is long enough to project beyond the separating plate **5044** on both sides. The stripping sheet **5158** comprises a fixing portion **5160** which extends at an angle downwards towards the separating plate **5044** and merges into a less sharply inclined edge portion **5162** which finally leads into the stripping edge **5096**.

A clamping strip **5164** is used to screw the stripping sheet **5158** to a holding strip **5166** by way of the fixing portion **5160**. The holding strip **5166** is in turn fixed at its edge which is remote from the separating plate **5044** to two adjacently arranged vertical supporting plates **5168** (see also FIG. **10**), so that a clearance remains between this and the separating plate **5044** (see FIG. **9**).

On its side which is remote from the stripping sheet **5158**, the holding strip **5164** supports a stripping strip **5170**, which increases the stripping effect of the stripping element **5092***b*.

On their sides facing the separating plate **5044**, the supporting plates **5168** support a plurality of electromagnets **5172** which are arranged in the longitudinal direction and can cooperate with corresponding electromagnets of the stripping element **5092***a* arranged on the opposite side of the separating plate **5044**.

At their upper edge regions, the supporting plates **5168** are connected to a coupling web **5174** by way of which the linear chains **5154***b* are coupled to the stripping element **5092***b*.

Four rollers **5176** are rotatably mounted on the coupling web in such a way that the stripping element **5092** can run along the separating plate **5044**.

Instead of the stripping sheets **5158**, a stripping component which uses an air stream can also be present in the stripping elements **5092**, as is the case in the stripping element **4092** according to FIG. **8**.

The stripping device **5094** functions as follows:

Firstly, the electromagnets **5172** of the stripping elements **5092***a* and **5092***b* are deactivated. The separating plate **5044** which is to be freed of separating agent and overspray which has separated on this latter is pulled into the rail profile **82** by means of the clamping shoe **84** so that the separating plate **5044** comes to lie between the stripping elements **5092***a*, **5092** (see FIG. **9**). If required, there can be provision for the stripping elements **5092***a*, **5092***b* to be kept at a spacing from one another so that there is no risk of the separating plate **5044** hitting one of the stripping elements **5092***a* or **5092***b* when it runs into the rail profile **82**. To this end, the stripping elements **5092***a*, **5092***b* run in lateral guide rails, at least in the region downstream of the rail profile **82** for example, which guide the two stripping elements **5092***a*, **5092***b* away from one another.

When the separating plate **5044** has assumed its desired position in the rail profile **82**, the electromagnets **5172** are activated. The stripping elements **5092***a*, **5092***b* are thus pulled against the separating plate **5044**.

The electric motors **5148** of the lifting/lowering devices **5146** are then activated in such a way that the stripping elements **5092***a*, **5092***b* are pushed downwards along the separating plate **5044** by the linear chains **5154***a*, **5154***b*. The stripping sheets **5158** of the stripping elements **5092***a*, **5092***b* are held in constant contact with the separating plate **5044** by the magnetic force and the stripping elements **5092***a*, **5092***b* roll on their rollers **5176** over the separating surfaces **5046** and **5048** of the separating plate **5044**.

On the downward path of the stripping elements **5092***a*, **5092***b*, the separating agent with the overspray separated thereon is scraped off both separating surfaces **5046** and **5048** of the separating plate **5044**.

When the stripping elements **5092***a*, **5092***b* have reached their lowest position, the electric motors **5148** are operated in the opposite direction so that the stripping elements **5092***a*, **5092***b* are pulled back upwards by the linear chains **5154***a* and **5154***b*.

Separating-agent residues which may still be adhering to the separating plate **5044** can be detected and removed here by the separating strip **5170**.

The separating-agent layer on the separating plate **5044** is otherwise renewed as explained above with reference to FIGS. **1** to **8**.

It is to be understood that additional embodiments of the present invention described herein may be contemplated by one of ordinary skill in the art and that the scope of the present invention is not limited to the embodiments disclosed. While specific embodiments of the present invention have been illustrated and described, numerous modifications come to mind without significantly departing from the spirit of the invention, and the scope of protection is only limited by the scope of the accompanying claims.

The invention claimed is:

1. A method for separating overspray from overspray-laden booth exhaust air of coating systems, the method comprising the steps of:

taking up the overspray by an air stream and conveying the overspray to an electrostatically operating separating device wherein solids are separated from the overspray on at least one separating surface; and,

using an electrically conductive material or material mix as a separating agent, which is applied to the at least one separating surface of the separating device and which has a wax-like consistency at an operating temperature of the separating device.

2. The method according to claim **1**, wherein the separating agent has a viscosity of greater than 2000 mPa s at the operating temperature.

3. The method according to claim **1**, wherein the separating agent has a consistency similar to that of hard paraffin at the operating temperature.

4. The method according to claim **1**, wherein the separating agent has a plastic consistency at the operating temperature.

5. The method according to claim **4**, wherein the separating agent is kneadable or spreadable at the operating temperature.

6. The method according to claim **1**, wherein the operating temperature is below approximately 28° C.

7. The method according to claim **1**, wherein a viscosity of the separating agent reduces at a temperature above the operating temperature.

8. The method according to claim **1**, wherein the separating agent is substantially inert with respect to the solids which are separated.

9. The method according to claim **1**, wherein the separating agent comprises a grease, a paraffin, a soap, a wax, or a gel.

10. The method according to claim **1**, wherein separating agent with separated solids which is present on the at least one separating surface is removed after an operating period and unladen separating agent is applied to the at least one separating surface.

11. The method according to claim **10**, wherein the removal of separating agent with separated solids takes place by means of a stripping element, for which the at least one separating surface and the stripping element are moved relative to one another.

12. The method according to claim **10**, wherein the application of unladen separating agent takes place by the at least one separating surface being moved into a dip bath filled with separating agent and out of the dip bath.

13. The method according to claim **10**, wherein the application of unladen separating agent takes place by the separating agent being sprayed or squirted onto the at least one separating surface.

14. The method according to claim **10**, wherein the operating period is approximately 2 hours, approximately 4 hours, approximately 6 hours, approximately 8 hours, approximately 10 hours, approximately 12 hours or several days.

15. A device for separating overspray from overspray-laden booth exhaust air of paint systems comprising:

a) at least one separating surface along which the overspray-laden booth exhaust air is conveyed and which is connected to a terminal of a high voltage source;

b) an electrode device which is arranged in the overspray-laden booth exhaust air, and which is associated with the at least one separating surface and which is connected to an other terminal of the high voltage source; and,

c) an electrically conductive material or material mix is applied as a separating agent to the at least one separating surface and which has a wax-like consistency at an operating temperature of the device.

16. The device according to claim **15**, wherein the separating agent has a viscosity of greater than 2000 mPa s at the operating temperature.

17. The device according to claim **15**, wherein the separating agent has a consistency similar to that of hard paraffin at the operating temperature.

18. The device according to claim **15**, wherein the separating agent has a plastic consistency at the operating temperature.

19. The device according to claim **18**, wherein the separating agent is kneadable or spreadable at the operating temperature.

20. The device according to claim **15**, wherein a viscosity of the separating agent reduces at a temperature above the operating temperature.

21. The device according to claim **15**, wherein the separating agent is substantially inert with respect to the solids which are separated.

22. The device according to claim **15**, wherein the separating agent comprises a grease, a paraffin, a soap, a wax, or a gel.

23. The device according to claim **15**, further comprising: a separating-agent renewal device by means of which separating agent with separated solids which is present on the at least one separating surface can be removed and/or unladen separating agent can be applied to the at least one separating surface.

24. The device according to claim **23**, wherein the separating-agent renewal device comprises at least one stripping element which can be moved relative to the at least one separating surface.

25. The device according to claim **24**, wherein the at least one stripping element is coupled to a linear chain drive.

26. The device according to claim **24**, wherein holding means are provided, by means of which the at least one stripping element is held at least temporarily in contact with the at least one separating surface.

27. The device according to claim **26**, wherein the holding means comprise a magnet.

28. The device according to claim **24**, wherein the at least one stripping element comprises at least one exit opening, from which a fluid exits.

29. The device according to claim **23**, wherein the separating-agent renewal device comprises a dip bath filled with separating agent and a conveyor device by means of which the at least one separating surface is moved into and back out of the dip bath.

30. The device according to claim **23**, wherein the separating-agent renewal device comprises a nozzle device by means of which the separating agent is sprayed or squirted onto the at least one separating surface.

31. The device according to claim **15**, wherein the at least one separating surface is an outer face of a plate-shaped separating element.

32. The device according to claim **15**, wherein the electrode device has a corona portion and a field portion, wherein the corona portion is arranged upstream of the field portion in a flow direction of the overspray-laden booth exhaust air.

33. A system for coating comprising:

a) a coating booth in which the objects are acted upon by coating material and through which an air stream can be conducted, and wherein the air stream takes up and removes overspray particles of the coating material; and,

b) an electrostatically operating separating device constructed according to claim **15**.

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